IN THE CLAIMS:

1. (original) A process of lateral crystallization comprising:

providing a silicon film on a substrate surface;

heating a localized substrate region at the substrate surface to a temperature above the formal melting point of the substrate for a short period of time such that the substrate is not significantly damaged; and

irradiating a portion of the silicon film in thermal contact with the substrate region to crystallize the portion of the silicon film, while the localized substrate region remains above the formal melting point of the substrate.

2. canceled

3. (currently amended) The process of claim [[2]] 1, wherein the substrate surface is SiO_2, and heating the localized substrate region includes heating with a [[the]] laser heating source having [[has]] an optical wavelength of between approximately 9 and 11 μm.

4. (original) The process of claim 3, wherein the laser heating source is a CO_2 laser.

5. (original) The process of claim 4, wherein the CO_2 laser has a pulse duration of between approximately 0.01 milliseconds and 1 millisecond.

6. (currently amended) The process of claim [[2]] 1, wherein irradiating to crystallize the portion of the silicon film includes irradiating with ~~the laser annealing source is~~ an excimer laser.

7. (original) The process of claim 6, wherein the excimer laser is a XeCl laser or a KrF laser.

8. (original) The process of claim 6, wherein the excimer laser has a pulse duration of between approximately 30 nanoseconds and 300 nanoseconds.

9. (currently amended) The process of claim [[2]] 1, wherein irradiating to crystallize the portion of the silicon film includes irradiating with ~~the laser annealing source is~~ a solid-state laser.

10. (original) The process of claim 9, wherein the solid-state laser is a frequency-doubled Nd-YAG laser or a frequency-doubled Nd-YVO_4 laser.

11. (original) The process of claim 9, wherein the solid state-laser is a frequency-tripled Nd-YAG laser or a frequency-tripled Nd-YVO_4 laser.

12. (currently amended) The process of claim [[2]] 1, wherein irradiating to crystallize the portion of the silicon film includes irradiating with a [[the]] laser annealing source that has a discharge frequency of between approximately 100 Hz and 500 Hz.

13. (currently amended) The process of claim [[2]] 1, wherein irradiating to crystallize the portion of the silicon film includes irradiating with a [[the]] laser annealing source that has a discharge frequency of between approximately 10 kHz and 100 kHz.

14. (currently amended) The process of claim [[2]] 1, wherein heating the localized substrate region includes heating with a [[the]] laser heating source that is pulsed, wherein irradiating to crystallize the portion of the silicon film includes irradiating with a [[the]] laser annealing source that is pulsed, and the laser heating source irradiates the substrate prior to irradiation of the silicon film by the laser annealing source pulse.

15. (original) The process of claim 14, wherein the laser annealing source pulse is shorter than the laser heating source pulse, and starts during the laser heating source pulse.

16. (original) The process of claim 15, wherein the laser annealing source pulse is completed during the laser heating source pulse.

17. (original) The process of claim 14, wherein the laser annealing source pulse occurs after the laser heating source pulse.

18. canceled